

REMARKS

Claims 20-23 and 26-36 were examined and rejected in the above-identified Office Action. Claims 1-19 and 24-25 have been previously canceled. Applicants amend claim 20. Applicants respectfully request reconsideration of claims 20-23 and 26-36, in view of at least the following remarks.

I. Claims Rejected Under 35 U.S.C. § 102

Claims 20-23 and 26 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,500,546 to Marum et al. (Marum). To anticipate a claim, the relied upon reference must disclose every limitation of the claim.

Applicants respectfully disagree for at least the reason that the cited references do not teach the following limitations of independent claim 20. Among other elements, Claim 20 includes the third doped region doped with a greater concentration of the second dopant. According to claim 20, for example, the third doped region doped with a greater concentration of the second dopant than the second well is able to dissipate an amount of predetermined charge incident upon the performance circuit with a resistivity in the second well that falls dramatically at high conduction, thereby allowing all sides of the unit cell to conduct almost uniformly. (See specification, page 7, lines 5-6; page 14, lines 17-24, as filed.)

On the other hand, Marum teaches that second well 35 has dopant N⁺, and doped region 71 has dopant N (where doped region 71 is the third doped region and has a lesser concentration of the dopant). Thus, Marum does not teach or suggest the above-noted limitation.

Applicants will now address the additional references cited by the Patent Office in other parts of the rejection.

In addition, U.S. Patent No. 5,714,784 to Ker (Ker) teaches N⁺ anode and P⁺ cathode, but fails to teach or suggest the above-noted limitations of amended claim 20.

The final reference cited by the Patent Office, is U.S. Patent No. 5,448,100 to Beasom (Beasom). Beasom does not teach or suggest the protection circuit having a plurality of unit cells limitations of claim 20, and cannot be properly combined with Marum. For example, Marum teaches zener diode 30 having a low voltage breakdown voltage affected by a doping Z-well region 34 which is an N⁺ region with a concentration of between 1.0E 17 for a breakdown of 8 volts, and 1.6E 17 for a breakdown voltage of 6 volts. (See col. 3, lines 12-18.) Thus, the primary purpose of diode 30 or diode 70 is to be a clamping mechanism having a low breakdown voltage which is controlled by doping region 34 to a higher concentration of dopant than region 32. (See col. 3, line 66 through col. 4, line 4; and col. 5, line 45 through line 61)

On the other hand, Beasom teaches a high voltage diode where N-type region 12 is lightly doped with two to three times less dopant than P-type region 16, such as by being doped with 1.0E 13 to 3E 15 atoms of dopant to ensure that region 12 is completely depleted to reduce resistivity during high voltage breakdown. (See col. 1, lines 16-36; col. 2, lines 63-69; and col. 3, lines 15-25) Thus, the use of the amount of dopant for region 12 taught in Beasom (an amount which is at least a hundred times less than the amount taught in Marum) would defeat the primary purpose of allowing the diode in Marum to have a low voltage breakdown and, thus perform as an electrostatic discharge protection circuit shunt. In other words, forming the high voltage diode of Beasom in the electrostatic discharge first shunt of Marum would cause that shunt to require such a high voltage before breaking down that it would not shunt the static discharge voltage to ground until the circuit it was protecting was already damaged or destroyed.

Hence, since neither Marum, Ker, nor the combination teach or suggest the above-noted limitations of amended claim 20, and since Beasom cannot be properly combined with Marum, Applicants respectfully request the Patent Office withdraw the rejection above for amended claim 20.

Claims 21-23 and 26, being dependent on independent claim 20, are patentable due to their dependency.

II. Claims Rejected Under 35 U.S.C. § 103

Claims 27-29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Marum in view of U.S. Patent No. 5,714,784 to Ker et al. (Ker). To render a claim obvious, all elements of that claim must be taught or suggested by at least one properly combined reference.

Applicants respectfully disagree with the above rejection for at least the reasons that the cited references do not teach or suggest the following limitations of independent claim 27. Claim 27 includes forming a first and second protection circuit and coupling the second protection circuit between the first protection circuit and the performance circuit, where the second protection circuit is in a well separate from the well of the performance circuit. On the other hand, Marum teaches that circuit 70 of Figure 4 for use as a primary clamping mechanism only. (See col. 3, lines 43-56; col. 6, line 65 through col. 7, line 15.) Thus, Marum does not suggest or describe a second protection circuit occupying a second well and including a plurality of unit cells coupled between a first protection circuit and the performance circuit because Marum only teaches that circuit 70 as the primary protection circuit and not as coupled between another protection circuit and the performance circuit of Marum (see Figures 1 and 2 where secondary clamp 18 or diode 30 is second the protection circuit coupled between primary clamp 14 (e.g., circuit 70) and circuit 20). Moreover, Ker fails to address the limitation noted above. Specifically, the protection circuits and performance circuits of Ker share a common well. (See Figures 2-4 and col. 4, lines 18-42) Hence, Applicants respectfully request that the Patent Office withdraw the rejection above of independent claim 27.

Claims 28-29, being dependent on rejected independent claim 27, are patentable due to their dependency.

The Patent Office rejects claims 30-36 under 35 U.S.C. § 103 as being unpatentable over Marum in view of Beasom.

Applicants respectfully disagree with the rejection above and submit that the cited references do not teach or suggest the third doped region doped with a greater

concentration of the second doping, as required by claim 30. An argument analogous to the one provided above with respect to amended claim 20 applies here as well. Hence, for at least the reasons above, Applicants respectfully request that the Patent Office withdraw the rejection of independent claim 30.

Claims 31-36 being dependent on rejected independent claim 30, are patentable due to their dependency.

CONCLUSION

In view of the foregoing, it is believed that all claims now pending (1) are in proper form, (2) are neither obvious nor anticipated by the relied upon art of record, and (3) are in condition for allowance. A Notice of Allowance is earnestly solicited at the earliest possible date. If the Examiner believes that a telephone conference would be useful in moving the application forward to allowance, the Examiner is encouraged to contact the undersigned at (310) 207-3800.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly, extension of time fees.

Respectfully submitted,

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By: _____

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CERTIFICATE OF MAILING:

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on March , 2005

Marilyn Bass

March 24, 2005